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XIX. *Descriptions of new species of Cryptoceridæ, belonging to the genera Cryptocerus, Meranoplus, and Cataulacus.* By FREDERICK SMITH.

[Read 4th October, 1876.]

HAVING published three papers on this remarkable group of insects in the Transactions of the Society, I offer a fourth, in which twelve new species are described, of one of which I fortunately have obtained all the sexes, figures of which are given in the plate that illustrates the paper.

In previous publications I have altogether described thirty-six species, those described in the present paper making the total number forty-eight.

In a former paper I gave some account of the habits of these insects. For that information I was partly indebted to the account published by Professor Lund, who describes the manner in which they capture their prey; this, he tells us, is similar to that of Hunting Spiders,—by springing upon it. For the more interesting details, however, I was indebted to Mr. H. W. Bates, who, when resident in Brazil, observed these insects with great attention. He informed me that *Cryptocerus* constructed its burrows in decaying trees, its colonies not being numerous; consisting, in the nests examined, of about a dozen females, a few males, and the workers, numbering about the same as the females.

Of the habits of the genera *Meranoplus* and *Cataulacus* no information had at that time been obtained. I have now the satisfaction of giving some account of the habit of a species of *Meranoplus*, *M. intrudens*, observed by Mr. John Monkhouse Hutchinson, resident in the Weenen district of Natal, South Africa. This species makes use of the thorns of a species of acacia, in which it constructs its formicarium; the thorns are from four to five inches in length, and, at the distance of about half an inch from the pointed end, a small round hole is made by the ants, which serves as ingress and egress to and from the nest. The thorns contain a kind of spongy pith, in which the channels and chambers of the nest are constructed. A remarkable fact in connexion with this insect is, that

when the thorns, forwarded in a letter, were received by Mr. Hutchinson's mother, some of the ants were still alive and active, after having been at least six weeks on their journey; so that, calculating from the time the thorns were collected in the Weenen district of Natal, at a spot one hundred and twenty miles from the coast, in all probability the ants had been two months in reaching their destination, thus showing a wonderful tenacity of life in these insects.

Subsequent to the reception of the first parcel of thorns a second supply has been received, in which it was found that many of the ants were still alive. Two of these thorns were sent to me, when, on cutting one open, I had the pleasure of finding the three sexes. Figures of each are given in the plate that illustrates this paper.

One circumstance that I observed may possibly, to some extent, account for the fact of some of the ants being alive when they reached England. I noticed that the abdomen of several specimens was mutilated, a hole being observable on the upper surface of them. This gave rise to the suggestion in my mind of the possibility of the ants having fed upon each other. This is, however, a matter of entire uncertainty; but that they could easily gnaw holes through the integument of the abdomen is proved by the fact of their perforating the thorns, which are of a much harder consistency.

Among the thorns sent, one or more were tenanted by a distinct species of ant, *Pseudomyrma natalensis*. These also were alive when received, the majority being females.

Previous to finding the sexes of *Meranoplus intrudens* in the acacia thorn, I was unacquainted with the male of any species of that genus; it was, therefore, very gratifying to find that in this genus of *Cryptoceridæ* the male sex does not differ in form so entirely from the others as it is found to do in the genus *Cryptocerus*; on the contrary, it greatly resembles the worker: it has however ocelli, which the worker has not. The female is distinguished by an elongated abdomen, a more ovate form of thorax, and having, like the male, both wings and ocelli.

An interesting circumstance connected with the opening of the acacia spine that contained the three sexes of *Meranoplus*, was that of my finding with them a small bee belonging to the exotic genus *Allodape*. This genus of bees is closely allied to that of *Ceratina*, the habit of the latter being to perforate the pith of dead bramble stems.

It may, therefore, be reasonably inferred that the habit of *Allodape* is similar, and that these bees perforate the acacia thorns and use them as their nidus in the same manner as *Ceratina* uses the bramble stems. The bee that was found might possibly have entered the thorn, tenanted by the ant, mistaking it for that which contained her own nest.

Genus *CRYPTOCERUS*, Latr.

1. *Cryptocerus fervidus*.

Female.—Length $5\frac{1}{2}$ lines. Chestnut-brown, the abdomen with an indistinct pale macula on each side at its base and an ovate one placed obliquely at its apex. The head rather longer than broad; slightly convex above, with the lateral margins raised; the posterior margin of the vertex obliquely truncate; two minute tubercles on the vertex in front of the truncation; the flagellum of the antennæ dark fuscous. The thorax of the same width as the head; the prothorax oblique, with the margins sharp and slightly raised; behind the insertion of the wings narrowed, and with a short spine on each side of the metathorax posteriorly; the scutellum semicircular. The abdomen oblong; the sides parallel, the anterior margin incurved, with the lateral angles slightly rounded; the first node of the peduncle subquadrate, slightly narrowed posteriorly, the second node transverse and with a short spine at the anterior angles. (Fig. 1, ♀. Pl. XI.)

Hab.—Rio.

2. *Cryptocerus gibbosus*.

Worker.—Length $3-3\frac{1}{2}$ lines. Black, punctured, each puncture with a pale shining seta; the lateral margins of the head broadly rufo-testaceous anteriorly; also a rufo-testaceous spot at the basal angles of the abdomen. Head large, wider than the thorax; longer than broad, the lateral margins raised, convex above; two small tubercles on the vertex. The prothorax transverse, and having a short pale spine at the anterior lateral angles, with a transverse, sharp, raised margin posteriorly; the mesothorax semicircular; the metathorax produced laterally and forming a blunt spine, from which it becomes much narrower. Abdomen heart-shaped; the nodes of the peduncle

transverse and each forming a spine that curves backwards. (Fig. 2, ♂. Pl. XI.)

Hab.—Mexico.

3. *Cryptocerus jucundus*.

Worker.—Length 2 lines. Black, punctured, each puncture having a pale shining seta; the head oblong and narrowed anteriorly; the lateral margins before the eyes broadly pale rufo-testaceous; the antennæ of the same colour. Thorax narrower than the head; transverse anteriorly, slightly arched; the lateral angles acute, gradually narrowed to the metathorax, with the margins narrowly pale testaceous; about the middle, slightly contracted, with a minute tooth in the middle of the contraction; the lateral margins of the metathorax with two minute teeth; the tibiæ and tarsi pale rufo-testaceous. Abdomen heart-shaped, pale rufo-testaceous at the base; the nodes of the peduncle transverse and produced laterally into a pale spine, curved backwards. (Fig. 3, ♂. Pl. XI.)

Hab.—Mexico.

4. *Cryptocerus varians*.

Worker.—Length 2 lines. Varying in colour from pale yellow to black-brown; in the dark specimens the margins of the head are anteriorly reddish, as are also the legs, antennæ, and sides of the abdomen towards the base. Head and thorax punctured; the latter oblong, with a transverse suture a little beyond the middle; the anterior lateral angles acute; the margins before the suture with two blunt teeth; behind the suture the margins are first produced into a small sharp tooth, and then suddenly narrowed to the apex of the metathorax. Abdomen oblong-ovate, deeply emarginate at the base; the sides narrowly margined. (Fig. 4, ♂. Pl. XI.)

Hab.—Cuba.

5. *Cryptocerus pallidicephalus*.

Female.—Length $3\frac{1}{2}$ lines. Black, with the head, tibiæ and the base of the abdomen laterally, and a subovate macula on each side near its apex, ochraceous. Head oblong, rather widest in front, the margins raised, dish-shaped; covered with large shallow punctures; the eyes and head beneath black; the antennæ, with the scape, pale ferruginous, and the flagellum black. Thorax punctured,

each puncture with a pale seta; the anterior margin of the prothorax arched, the lateral angles acute and pale testaceous; the sides curved, narrowed posteriorly; the metathorax emarginate, forming a blunt tooth at the lateral angles; the tarsi ferruginous. Abdomen oblong-ovate and deeply emarginate at the base; the first node of the peduncle oblong, and having a small tooth on each side; the second node transverse, with a short curved tooth on each side at the base. (Fig. 5, ♀. Pl. XI.)

Hab.—Mexico.

Type in the British Museum.

6. *Cryptocerus maculatus*.

Female.—Length $2\frac{3}{4}$ lines. Black, punctured, each puncture with a pale shining seta; the abdomen with two basal and two sub-apical pale yellow maculæ. Head oblong, with the lateral margins raised. Thorax oblong; the prothorax with the anterior margin transverse and declining forwards; the anterior margin arched, with the lateral angles acute; narrowed to the metathorax, which is emarginate and toothed laterally. Abdomen deeply emarginate at the base; the basal maculæ triangular, the apical ones ovate; the first node of the peduncle subglobose; the second wider than the first, anteriorly produced laterally into a curved tooth, from which it is narrowed posteriorly. (Fig. 6, ♀. Pl. XI.)

Hab.—Bahia. Type in the British Museum.

7. *Cryptocerus fenestralis*.

Female.—Length $5\frac{3}{4}$ lines. Black; head and thorax strongly punctured and slightly shining; the abdomen delicately shagreened, giving it a silky texture, slightly shining. Head oblong, convex, the lateral margins nearly parallel to the eyes; in front of them the head slightly widens and the margins are slightly raised; the posterior margin has the middle nearly straight, and on each side it is emarginate, the lateral angles being acute. The prothorax transverse and produced laterally into a stout tooth or spine; the sides rounded to the metathorax, which is deeply emarginate, and has a stout spine on each side, which diverges slightly outwards. Wings brown, with the first submarginal cell hyaline. Abdomen oblong; the

sides parallel, rounded at the apex, and slightly emarginate at the base.

Hab.—St. Paulo (Brazil).

In the British Museum; from Mr. Bates' collection.

8. *Cryptocerus basalis*.

Female.—Length $5\frac{1}{2}$ lines. Shining black; head very finely punctured; thorax and nodes of the peduncle of the abdomen much more strongly so; the base and apex of the abdomen finely punctured. Head convex above, as broad as long; the margins before the eyes raised, anteriorly emarginate in the middle; a circular fossulet in the middle towards the anterior margin; two small tuberculate spines at the posterior margin, about one-third of the width of the margin apart; the lateral angles acute. Thorax a little longer than the head; the anterior margin transverse, nearly straight, being very slightly arched; the lateral angles acute, subspinose; gradually narrowed to the metathorax; the metathorax transverse above and with the lateral margins produced into an acute angle or tooth; the posterior margin emarginate; the truncation concave, smooth and shining. Abdomen oblong-ovate, emarginate at the base and having on each side a marginal, large, subovate, yellow macula; the disk of the abdomen very smooth and shining.

In the British Museum.

Hab.—Brazil (Chontales).

9. *Cryptocerus discocephalus*, Smith.

Female.—Length $3\frac{1}{4}$ lines. Dark reddish-brown, the abdomen of a lighter tint. Head concave above, oblong, dish-shaped and punctured. Thorax about the same length as the head, covered with shallow punctures; obliquely truncate towards the head, the margin of the truncation raised; the sides, before the wings, nearly parallel; behind the wings narrowed to the metathorax; the metathorax transverse, with the lateral margins slightly rounded, the lateral angles acute; wings fusco-hyaline; the legs bright red-brown. Abdomen oblong, emarginate at the base, very finely shagreened; the nodes of the peduncle rugulose, the first subovate, the second transverse, with a tooth at the lateral angles of the base.

Hab.—Villa Nova and Santarem, Brazil; St. Vincent.

In the British Museum, from the collection of Mr. H. W. Bates.

The large worker of this species was described and figured in the second volume of the Transactions of this Society, Pl. XX. fig. 2. Mr. Bates subsequently sent specimens of both the sized workers, obtained from the nest; the small worker has a differently shaped head to the larger worker; the head is nearly flat above, slightly convex, punctured, with the margins pale reddish-brown, widest in the middle. The thorax is differently shaped anteriorly, not being obliquely inclined to the head; the abdomen and nodes of the peduncle are the same in form as in the larger worker. The male and the large and small worker are figured in the Catalogue of Formicidæ, published by the trustees of the British Museum, Part VI. Pl. XI. fig. 1, ♂; 2, worker major, 3, worker minor.

Genus *MERANOPLUS*, Smith.

1. *Meranoplus intrudens*.

Female.—Length 3 lines. Opaque-black; the scape of the antennæ, the base and apex of the flagellum, tips of the femora, the tibiæ, the anterior tarsi, and the apical joints of the intermediate and posterior pairs, light ferruginous; the wings flavo-hyaline, the nervures pale rufotestaceous. Head, thorax and nodes of the peduncle with rugose confluent punctures; the head longer than broad, slightly narrowed before the eyes; the posterior margin of the vertex broadly emarginate. The anterior margin of the prothorax arched; the thorax about the same length as the head, narrowed behind the insertion of the wings; the metathorax with two blunt spines. Abdomen oblong and very finely shagreened; emarginate at the base and rounded at the apex.

Worker.—Only differs from the female in being rather shorter, and in the form of the thorax, as will be seen by the figure; the abdomen shorter, with the sides less parallel.

Male.—Length $2\frac{1}{2}$ lines. The colour and sculpture as in the female. Head wider than the thorax, much narrowed before the eyes; the lateral angles of the posterior margin of the vertex subspinose. Thorax anteriorly arched; the mesothorax with two curved, deep, broad channels that curve inwardly and unite at the base of the scutellum; the scutellum, the spines of the metathorax, and the nodes of the peduncle of the abdomen, grooved

longitudinally; the wings as in the female; the abdomen subovate, slightly emarginate at the base and pointed at the apex. (Fig. 7, ♀; 7a, ♂. Pl. XI.)

Hab.—Weenen District, Natal.

This species was discovered by Mr. John Monkhouse Hutchinson, inhabiting the thorns of a species of acacia. Some of the specimens of the workers have the legs more or less ferruginous.

2. *Meranoplus vestigator*.

Worker.—Length $2\frac{3}{4}$ lines. Head, thorax and legs brown-black; abdomen black. Head subglobose, shining, and with a few irregular carinae; antennae reddish-brown, palest at the apex. Thorax short, not longer than the head, longitudinally rugose-striate; the anterior margin arched, the lateral angles acute and subdentate; narrowed posteriorly; the metathorax with two long acute spines; the legs pale at the base of the femora; the tarsi pale rufo-testaceous. Abdomen heart-shaped, smooth, shining, and with scattered erect setae; the first node of the peduncle wedge-shaped, the second subglobose, both rugose. (Fig. 8, ♂. Pl. XI.)

Hab.—Matabello, Eastern Archipelago.

Type in the British Museum.

3. *Meranoplus attenuatus*.

Female.—Length $2\frac{1}{2}$ lines. Black and shining; the head rather strongly punctured; the ocelli distinct, placed in a triangle on the vertex; the apical joint of the antennae rufo-testaceous. Thorax oblong, longitudinally roughly striated; the metathorax deeply emarginate, forming two lateral stout teeth; wings wanting; femora much attenuated at the base, and swollen in the middle; the anterior tibiae and tarsi, and the apical joints of the two posterior pairs, rufo-testaceous. Abdomen oblong-ovate, striated at the base, the apex with scattered pale hairs; the first node of the peduncle with large punctures, and much narrower than the second, which is longitudinally striated. (Fig. 9, ♀. Pl. XI.)

Hab.—Pará.

Type in British Museum.

4. *Meranoplus puncticeps*.

Worker.—Length 2 lines. Black and shining; the

head subovate, punctured; antennæ pubescent, the apex testaceous; the mandibles and a small space between the antennæ striated. Thorax oblong, deeply constricted at the base of the metathorax, which is longitudinally striated, deeply emarginate, and with two longish acute spines; the anterior portion of the thorax strongly longitudinally punctate-striate; the femora much attenuated at their base and swollen in the middle; the apical joints of the tarsi testaceous. Abdomen ovate, longitudinally striated at the base; the nodes of the peduncle deeply striated, the first narrower than the second, both subovate. (Fig. 10, ♂. Pl. XI.)

Hab.—Pará.

Type in British Museum.

This is very probably the worker of *Meranoplus attenuatus*; both are from the same locality, and were received at the same time.

Genus CATAULACUS, Smith.

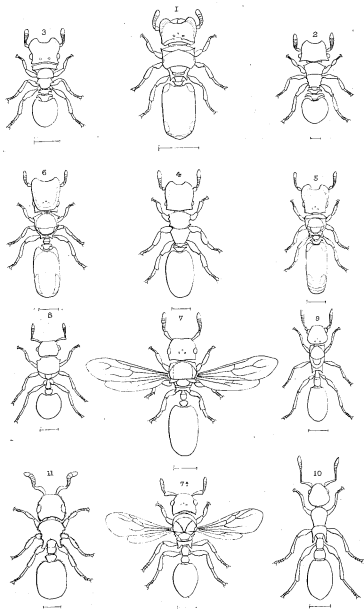
1. *Cataulacus hispidus*.

Worker.—Length $2\frac{1}{4}$ lines. Black; the head, thorax and nodes of the peduncle of the abdomen rugose; the apical portion of the scape, the apex of the flagellum, the anterior tibiæ and tarsi, and the apex of the intermediate and posterior tibiæ above, pale ferruginous. Head with the sides rounded, narrowed anteriorly, with the anterior margin very slightly emarginate, nearly straight; the margin of the vertex also slightly emarginate and crenulated; convex above, and longitudinally and irregularly rugose-striate. Thorax sculptured similarly to the head; the sides spinulose, narrower than the head, widest anteriorly; the metathorax with two stout spines; the legs rugose, covered with short, minute spines, each spine terminating with a pale seta; the spines on the margin of the thorax have also terminal white setæ as well as the nodes of the peduncle of the abdomen. Abdomen ovate, slightly emarginate at the base; the base with a number of irregular longitudinal carinæ; beyond, it is very delicately carinated, and sprinkled with minute, erect pale setæ. (Fig. 11, ♂. Pl. XI.)

Hab.—Singapore.

DESCRIPTION OF PLATE XI.

- Fig. 1. *Cryptocerus fervidus*, ♀.
2. " *gibbosus*, ♂.
3. " *jucundus*, ♂.
4. " *varians*, ♂.
5. " *pallidicephalus*, ♀.
6. " *maculatus*, ♀.
7. *Meranoplus intrudens*, ♀.
7a. " " ♂.
8. " *vestigator*, ♂.
9. " *attenuatus*, ♀.
10. " *puncticeps*, ♂.
11. *Cataulacus hispidus*, ♂.
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F. Smith del. et sculp.